# Mad Cow and Madder Organic Agriculture

*By ACSH Staff — January 20, 2004*

One cow known to be infected with BSE (bovine spongiform encephalopathy, a.k.a. mad cow disease) has set-off such a blizzard of comment that one hates to imagine what the response would have been had there been the 100,000 to 200,000 infected cows, which was the experience in the United Kingdom. A Rip Van Winkle who took a brief month or two snooze before Thanksgiving and awoke amidst the extended media response would have wondered what public health catastrophe had blighted our fair land, driving some people away from meat consumption and mainstream agriculture.

Yes, there may be more undiscovered infected cows, but their number is certainly likely to be small and the potential danger to human health is likely to be limited. The number of people actually contacting the disease might well be zero. Admittedly, numbers alone simply cannot describe the horrors of a disease like BSE the thought of one's brain becoming filled with holes like a Swiss cheese or watching a loved one slowly, painfully dying at an early age. Yet compare the number of human victims of BSE to the estimated 5,000 people who die each year from foodborne diseases in the United. And however high the numbers of routine food-related deaths may be today, they pale in comparison to the number of those who died in earlier times, or who are still dying today in places where poverty limits the use of safety-enhancing technology.

Even with the extraordinarily high level of food safety in the United States, several thousand people die each year of foodborne or waterborne diseases, while at least ten to fifteen times more suffer serious illness from them. Researchers at the Centers for Disease Control and Prevention estimated that "foodborne diseases cause approximately 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year. Known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths" (Mead et al, 1997).

**Organic Health Risks**

The media that is quick to magnify every hypothetical risk of modern food production largely ignores a far greater risk the practices of those in revolt against modern science.

The media does not blame the practice and ideology of anti-modernity when deaths result from failure to pasteurize juices or from fear-induced avoidance of immunization. Nor is there any mention of the dangers of salmonella from raw sprouts by those who oppose the only way to make them safe (other than cooking), namely irradiation, which can also make meat and other products safer. The emerging passion for "eating closer to nature" by consuming uncooked food neglects the importance of cooking for both unlocking nutrients, making complex proteins more digestible, reducing the toxicity of other proteins, and killing microorganism such as those that can be found in raw eggs. There is a sizeable body of scientific literature on the benefits to early humans from the control of fire for cooking, and there are recent studies showing that raw food diets may

contribute to malnourishment and calorie deficiency (Koebnick et al, 1999).

The unsafe practices of the anti-modernist are legion, including a preference for organic products such as corn with a much higher level of fumonisin, aflatoxin, and other fungal toxin infestation than conventional corn, which in turn has a higher but tolerable level of infestation than bioengineered Bt corn. Some anti-modernists pop a variety of pills with highly active amino acids or use a variety of herbs and other plant concoctions for which there is virtually no evidence of benefit. These pill poppers are folks who invoke the "precautionary principle" to oppose thoroughly tested products of modern science that have a demonstrable human benefit. They are all beneficiaries of the very science and technology they are so quick to criticize.

**Where's the Outrage at the Herbalists?**

In the brief time since the discovery of a BSE-infected U.S. cow, the Food and Drug Administration has banned the sale of ephedra, also known as Ma Haung. It contains the chemical ephedrine, which is similar chemically and in its effect upon humans to amphetamine, also known as speed. The FDA action made the headlines for a day or so and quickly faded from the news. From the media reports, one might assume that ephedra's sole users were athletes taking various forms of performance-enhancing drinks and supplements, with occasional use by long distance truck drivers to stay awake during night driving. One searches in vain for any mention that as Ma Huang ephedra has been a staple of the "health food industry," one of their herbal remedies (other herbal products have contained aristolochia acid, which has been shown to cause cancer and kidney failure, and Echinacea purpura, a member of the ragweed family and one of the few over-the-counter products known to cause a severe if not fatal allergenic reaction on its first use by some consumers).

Some of the very groups that are trying to take advantage of the mad cow scare have through legislation or other political action delayed the banning or regulation of herbal products, some of which, like ephedra, are demonstrably harmful and have brought disability and death to many users. The L-tryptophan-induced eosinophilia myalgia tragedy would almost certainly been avoided if the health food enthusiasts had not used both legislation and the courts to restrict FDA oversight on a variety of products. Attempts to withdraw the approval were successfully stymied yet it has become part of the anti-transgenic (or anti-biotech) rhetoric to blame the eosinophilia tragedy on the use of a genetically engineered bacterium in the production of the L-tryptophan. There is not a scintilla of evidence for such a causal relation, and the scientists who actually investigated the case found other likely causes, including the health food faddist practice of taking mega doses of L-tryptophan.

**Misplaced Gloating by the Anti-Modernists**

Early on during the unfolding of the BSE story, there was a wire service story that noted that the "organic" food advocates were doing their best to contain their gloating. It is, to say the least, more than a bit macabre for ideologues anticipating a massive human tragedy to have to struggle to contain "gloating." Those of us who question anti-pasteurization beliefs would not gloat at the death of a child from drinking unpasteurized apple juice or the death of an infant from pertussis contracted from an unimmunized older child.

Currently, there is a not too subtle attempt by "organic" beef producers to take advantage of the finding of one BSE cow by using every code word possible in their ads short of saying outright that they, unlike mainstream beef producers, are BSE-free. In the UK, the same set of assumptions meant that initially, no attempt was made by the inquiry taskforce studying the problem to "ascertain the incidence of BSE on organic farms, or whether it was significantly lower than on conventional farms" until the "latter half of 1995" at which time "the issue of BSE on organic farms received significant national publicity." When the taskforce did investigate, they found "36 affected herds" and said that even though they had not conducted a "full withinherd incidence analysis," they "still felt that organic herds did not have a lower incidence than the national average" (BSE Inquiry report).

**The Broader Argument Against Agriculture**

For the moment, the media coverage seems to have died down, but one can expect it to be re-energized should another infected cow be found. Thus far the American public has rightly discounted the "dangers" of beef eating and probably will be reassured by the new regulations and actions being taken to further reduce the already minuscule chance of anyone innocently consuming infected meat. It is amazing how many letters to the editor and columns were printed to define the cause of a BSE public health crisis that had yet to be demonstrated. In addition to the newspaper columns rather blatantly touting "organic" beef, a number of articles and letters to newspapers such as the *New York Times* called modern food production a "failed system" and attributed this failure to a variety of causes: "intensive agriculture," globalization, the evils of eating meat, or simply "The Way We Live Now" (Pollen 2004 and Klinkenborg 2004a&b).

Let us examine the alternative ways of obtaining our food that we long ago abandoned but to which we are urged to return.

To begin at the beginning, there is a growing body of literature in evolutionary biology and physical anthropology that cogently argues that meat eating for both energy and nutrient density was an absolutely essential element in our emergence as humans with our large brains and small hind gut (see, for example, the sources that I cite in DeGregori 2001, 77-78 and DeGregori 2002, 77-79; for a subsequent article, see Aielo and Wells 2002). "Brain tissue is metabolically expensive, requiring large supplies of oxygen and glucose. Furthermore, the brain's demand for these products is constant and unrelenting, regardless of the mental or physical state of the organism" (Milton 1988, 299; see also Milton 1993, 90). There is also a growing body of literature crediting the hominid pursuit of a meat-and-fruit diet as a significant causal factor in the development of human intelligence (for example, Stanford 1999, 134; see also the other numerous entries for Milton and for Stanford in my book citations noted above).

Vegetarianism is neither more natural than any other diet nor the "original human diet." Not only have humans been meat-eaters as long as we have been human, but our closest relatives, the chimpanzees, are also meat-eaters. Since about 200,000 years ago, the hominid brain has grown larger, requiring increasing amounts of energy to maintain it, but the gut has grown smaller, reducing the ability to extract energy from low-density foods. The modern vegetarian lifestyle is possible because through domestication of fruits and nuts, domestication and milling of grains, cooking, transportation, refrigeration, and affluence, a vegetarian can regularly acquire the necessary nutrients in sufficiently refined and palatable forms to survive (except vitamin B12, which comes only from animal products).

**The Myth of Ancient Gastronauts**

The argument blaming our ills on the emergence of agriculture is another variant of the belief in the special virtues of hunting and gathering societies, touted with such slogans as "the paleolithic diet" or "bring back the paleolithic" the latter a goal that would require eliminating all but a few million of earth's 6.3 billion inhabitants. What is rarely admitted in such talk is that foodborne diseases have always been a problem for humans, even for hunting and gathering peoples. Diseases might be caught from wild animals. One could catch rabies or tularemia, a "disease related to bubonic plague," which "may have been a significant cause of sickness and death among American Indian populations who regularly handled game and fur-bearing animals...[H]andling wild animals or their remains can also result in infection with such other diseases as toxoplasmosis, hemorrhagic fevers, leptospirosis, brucellosis, anthrax, salmonellosis, and a long list of lesser-known infections...[P]eople can encounter a variety of highly lethal anaerobic bacteria, including the agents of gangrene, botulism, and tetanus, if they expose themselves to the intestines of animals while butchering a kill" (Cohen 1989, 33).

Add in trichina worms (trichinosis) and staphylococcal infections, and it is clear that food harvested in the wild is not necessarily clean, wholesome, and natural. Drinking water in the wild can cause "beaver belly" (giardiasis) or be a source of "microorganisms derived from moose, ducks, and geese as well" (Garn 1994, 92). Water in the wild today, including "snow collected from the ground and melted," can be a source of a variety of parasites, including giardia and cryptosporidium (Wellness Letter 1998, 4). If you think that we eat "contaminated" food today and that we ate "clean" food in earlier times, think again.

Accepting agriculture and even husbandry but condemning modern intensive or industrial agriculture implies that somehow earlier forms of agriculture were purely idyllic and problem-free. But while many of the major infectious diseases of humans were originally derived from domesticated animals and still today new variants of the flu often originate from areas where small-scale agriculture predominates and farmers live in close proximity to their animals it is largely with much-derided modern industrial agriculture that some degree of separation of humans from their livestock at all stages of production and distribution has been achieved, *reducing* disease risks. Historically, in cold climates animals were often kept in-doors with their owner in cold weather to help keep both animals and humans warm but with accompanying potential for disease transmission. Prior to refrigeration and the railroad, dairy herds were kept in urban areas (next to the brewery to be fed beer mash), and cattle were often *herded through town* to be slaughtered.

And of course, horses were stabled in town, commonly used as draft animals.

The food produced by pre-modern agriculture did not live up to our modern romantics' image of it nor was it free of disease. "Effects of rust-contaminated grains can also be variable and cumulative, increasing over a season and with particular impact on pregnant women and their fetuses not evidenced until many months after their ingestion" (Garn 1994, 91). Even Rachel Carson, whose book *Silent Spring* is seen as the inspiration for the modern environmental movement, maintained that the perception of nature as an "enchanted forest" was a "fairy tale" (Carson 1962, 32-33). Some of the weeds associated with cultivars and often eaten with them are endowed with toxins and other substances deleterious to human health. "Moreover, weeds growing along with cultivars often included plants with interesting alkaloids, many of them in the tomato family that includes Datura, Belladonna, and the like. Herbs or "yarbs," boiled and served, also afforded a variety of alkaloids, neurotoxins, and allergens" (Garn 1994, 90).

Until more recent times, grain milling was incomplete, leaving broken pieces of husk, causing stomach lesions and digestive problems. In the past (and in many less developed areas today), "harvesting and milling techniques resulted in a considerable accretion of grit and little stones, as we see in the worn teeth of our colonial ancestors, Bronze-age and Iron-age Europeans, and American Indians." With storage, "weevils were often a regular part of the daily bread" (Garn 1994, 90).

(It is also naive in the extreme to believe that farmers of the past or poor farmers today have ever foregone feeding farm animals anything that they would eat that would contribute to their growth. Modern agriculture and the modern economy are often accused of being wasteful and inefficient, except of course when it suits the critics to argue against the efficiency of modern life, such as meat production with its efficient harvesting of all the meat of an animal and its use of recycled material.)

**Modern Agriculture the Best Match to Human Needs?**

Assuming that we all have to eat something, it is difficult to find any system of food production and consumption that is free of all difficulties. All things taken into account, our modern food production system is providing more people with an extraordinary range of choice of foodstuffs and with more nutrition and greater food safety than has ever been the case for humankind before. For many of us, the problem is not the inadequacy of food and nutrition availability but its abundance. There is no "natural" diet to which we can return to solve this problem. Quite the contrary, the literature that demonstrates the importance of meat-eating for our emergence as big-brained humans also shows that early humans needed a steady supply of other high-energy and nutritionally dense foods such as fruit and fats. "Overconsumption of meat and sugar by some human populations may be based in part upon dietary predilections of our omnivorous ancestors" (Hamilton, 1987, 118). Tasting "sweet" in nature would be a good proxy for nutrient density.

The food preferences that we have as biological beings evolved under conditions of scarcity of meat and fruits (that which tasted sweet). That we may consume animal fats and sugars to excess today does not negate the need for these items in our diet (in reasonable proportions). "The quantity of animal matter and products in the diets of some contemporary people can be

understood in terms of a nearly unlimited availability of animal matter superimposed upon food category preferences in the past" (Hamilton 1987, 121).

Hamilton offers the hypothesis that "some humans are led by inherited biases to choose a diet that our ancestors sought but could not have obtained for any practical interval" (Hamilton 1987, 121). "Sugar over-consumption can be explained in the same way. Fruits are the next choice after animal matter for omnivorous primates. However, ripe and sweet fruit is only seasonally available" for primates, while humans can now consume it constantly (Hamilton, 1987, 122). It is quite possible, then, that the current diet of affluent Americans, too rich in fats and sugars, is the result of "natural" cravings manifested through our cultural food preferences. This may explain why it is so difficult for many of us to limit our intake of these even though we know better. If we succeed in appropriately diversifying our diet, it is not because it is more "natural," but because modern knowledge guided us to do so.

**Harmony with Nature, Discord with the Facts**

The forms of food production presumed to be "natural, sustainable" and in harmony with nature are simply myth. Ironically, if the terms "eating closer to nature" or eating as "nature intended us to do" have any meaning whatsoever, they imply seeking sugars and fats. What we need is the modern technological system of food production which can always be improved upon by intelligent criticism and the dietary utilization of that production. There are no "natural" quick fixes and no ideological solutions or slogans. If we are to learn anything from "mad cow," it is that our food production system is so safe that even the most minor threat can draw our attention. Informed suggestions for improvement should be given careful consideration, but a call to abandon modernity is a folly that should be sharply condemned as the real threat to public health and wellbeing.

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Aiello, Leslie C. and Jonathan C. K. Wells. 2002. Energetics and the Evolution of the Genus Homo, Annual Review of Anthropology 31(323-338).

BSE Inquiry: The Report, Chapter 104, Volume 12: Livestock Farming, No. 10. Organic Farming Organic Farms and BSE. At http://www.bseinquiry.gov.uk/report/volume12/chapt104.htm [1].

Carson, Rachel. 1962. Silent Spring. Boston: Houghton Mifflin.

DeGregori, Thomas R. 2001. Agriculture and Modern Technology: A Defense. Ames, Iowa: Iowa State Press: A Blackwell Publishing Co.

DeGregori, Thomas R. 2002. Bountiful Harvest: Technology, Food Safety, and the Environment. Washington, D.C.: Cato Institue.

Cohen, Mark N. 1989. Health and the Rise of Civilization. New Haven: Yale University Press.

Garn, Stanley M. 1994. Uses of the Past, American Journal of Human Biology 6(1):89-96.

Hamilton, William J. III. 1987. "Omnivorous Primate Diet and Human Overconsumption of Meat," in Food and Evolution: Toward a Theory of Human Food Habits, edited by Marvin Harris and Eric B. Ross, pp. 117-132. Philadelphia: Temple University Press.

Klinkenborg, Verlyn. 2004a. Holstein Dairy Cows and the Inefficient Efficiencies of Modern Farming, The New York Times, January 5.

Klinkenborg, Verlyn. 2004b. Coming to Terms With the Problem of Global Meat, The New York Times, January 10.

Koebnick, C.; C. Strassner; I. Hoffmann, and C. Leitzmann. 1999. Consequences of a Long-Term Raw Food Diet on Body Weight and Menstruation: Results of a Questionnaire Survey, Annals of Nutrition and Metabolism: The Official Journal of the Federation of European Nutrition Societies 43(2):6979, March-April.

Mead, P.S; L. Slutsker; V. Dietz; L.F. McCaig; J.S. Bresee; C. Shapiro; P.M. Griffin; and R.V. Tauxe. 1999. Food-Related Illness and Death in the United States, Emerging Infectious Diseases Journal, 5(5):607-625, September-October.

Milton, Katharine. 1988. "Foraging Behavior and the Evolution of Primate Intelligence," in Machiavellian Intelligence II: Extensions and Evaluations, edited by Andrew Whitten and Richard W. Byrne, pp. 285-306. New York: Cambridge University Press.

Milton, Katharine. 1993. Diet and Primate Evolution, Scientific American 269(2):8693, August.

Pollan, Michael. 2004. Cattle Futures?: The Way We Live Now, The New York Times, January 11.

Stanford, Craig B. 1999. The Hunting Apes: Meat Eating and the Origins of Human Behavior. Princeton, N.J.: Princeton University Press.

Stephenson, Joan. 1997. Public Health Experts Take Aim at a Moving Target: Foodborne Infections, JAMA (Journal of the American Medical Association) 277(17):97-98, January 8.

Wellness Letter. 1998. Water in the Wild, University of California at Berkeley Wellness Letter: The Newsletter of Nutrition, Fitness, and Stress Management 14(3):4-5, January.

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